WE CLAIM:

1. A method for flow parameter estimates in magnetic resonance imaging comprising the following steps:

accessing magnetic resonance imaging data;

providing a magnetic resonance imaging model function; and,

using conditional probabilities based on Bayes' Theorem to resolve the magnetic imaging data with respect to the magnetic resonance imaging model.

2. The method as recited in claim 1 further comprising the application of Bayes' Theorem to method of maximum likelihood.

3. The method as recited in claim 1 further comprising the application of Bayes' Theorem to maximum *a posteriori* (MAP) method.

4. The method as recited in claim 1 further comprising the step of comparing probabilities for at least two noise models and determining which noise model of the at least two noise models is better.

5. The method as recited in claim 4 wherein the magnetic resonance imaging data is examined to determine which noise model of the at least two noise models is better.

6. A system for flow parameter estimates in magnetic resonance imaging comprises:

interface for accessing magnetic resonance imaging data; and

digital processor for using conditional probabilities based on Bayes' Theorem to resolve the magnetic imaging data with respect to a magnetic resonance imaging model.

7. The system as recited in claim 6 wherein the digital processor applies Bayes' Theorem to method of maximum likelihood.

8. The system as recited in claim 6 wherein the digital processor applies Bayes' Theorem to maximum *a posteriori* (MAP) method.

9. The system as recited in claim 6 wherein the digital processor compares probabilities for at least two noise models and determines which noise model of the at least two noise models is better.

10. The system as recited in claim 9 wherein the magnetic resonance imaging data is examined to determine which noise model of the at least two noise models is better.

11. An improved magnetic resonance imaging device for flow parameter estimates comprises:

a magnetic resonance imaging device having a digital processor;

wherein the digital processor uses conditional probabilities based on Bayes' Theorem to resolve the magnetic imaging data with respect to a magnetic resonance imaging model.

12. The improved magnetic resonance imaging device as recited in claim 11 wherein the digital processor applies Bayes' Theorem to method of maximum likelihood.

13. The improved magnetic resonance imaging device as recited in claim 11 wherein the digital processor applies Bayes' Theorem to maximum *a posteriori* (MAP) method.

14. The improved magnetic resonance imaging device as recited in claim 11 wherein the digital processor compares probabilities for at least two noise models and determines which noise model of the at least two noise models is better.